REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application, and indicating claims 10-12 are allowable.

Disposition of Claims

Claims 8-18 are pending in this application. Claim 8 is independent. The remaining claims depend, directly or indirectly, from claim 8.

Objection(s)

Claim 10 was objected as containing extraneous language. The objectionable language has been removed. Withdrawal of the objection is respectfully requested. Additional claim amendments have been amend so that the claims are internally consistent.

Rejection(s) under 35 U.S.C § 102

Claim 8-9 and 14-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,663,512 ("Schader"). This rejection is respectfully traversed.

Claim 8 recites that the "hardface coating [is] applied by a high pressure/high velocity oxygen fuel torch." Schader fails to disclose at least this element and, therefore, cannot anticipate the present invention. Referring to the portion of Schader (Col. 6, lines 23-26) cited by the Examiner, the prior art states:

> The hardfacing composition was applied by welding with an oxyacetylene torch, wherein the tube rod matrix metal was melted . . . Oxyacetylene welding is preferred to atomic hydrogen welding . . .

The Examiner then appears to equate oxyacetylene welding to the presently claimed high pressure/high velocity oxygen fuel torch. For the purposes of expediting examination, a brief explanation of the various welding techniques discussed in the prior art and in the present application is provided.

Oxyacetylene welding, commonly referred to as gas welding, is a process which relies on combustion of oxygen and acetylene. When mixed together in correct proportions within a hand-held torch or blowpipe, a relatively hot flame is produced with a temperature of about 3,200 °C. The chemical action of the oxyacetylene flame can be adjusted by changing the ratio of the volume of oxygen to acetylene. This welding technique has the disadvantage (as noted in the background of the instant application) of increasing potential thermal damage to seals and lubricants.

Atomic hydrogen welding is a process in which the welding heat is generated by passing a stream of hydrogen through an electric arc between two inclined electrodes, which are usually made of tungsten. The high temperature of the arc dissociates molecules of the gas into atoms, a large quantity of heat being absorbed by the hydrogen during dissociation. When the atoms leave the influence of the arc they recombine, forming molecules of hydrogen and liberating heat previously absorbed. The gas then burns in the ordinary way, taking up oxygen from the atmosphere for the purpose.

The average temperature of the flame is approximately 4000 °C. The heat is concentrated chiefly at the point of recombination of the atoms, and this recombination is accelerated catalytically by contact with the surface of the metal being welded. Thus an intense flame is obtained at the point of welding. The process is, therefore, used when rapid welding is necessary, as for stainless steels and other special alloys. The hydrogen

envelope prevents oxidation both of the metal and the tungsten electrodes, and it also reduces the risk of nitrogen pick-up.

In contrast to either of the processes described above, the present invention uses a high pressure/high velocity oxygen fuel (HVOF) process. Typical HVOF processes involve the combustion of gases, such as propane, propylene, hydrogen, or a liquid fuel such as kerosene. Fuel and oxygen mix and atomize within the combustion arc under conditions that monitor the correct combustion and pressure. The process creates a very high velocity stream, which is used to propel entrained particles (e.g., tungsten carbide) at near supersonic speeds before impact into the substrate. Advantageously, because the particles spend less time within the heat source (due to the speed of the particles) and because a lower flame temperature is required, thermal damage to seals and lubricant may be reduced (*see, e.g.,* paragraph 14 of the specification).

Schader is silent as to using an HVOF process. Thus, Schader fails to disclose or render obvious claim 8 of the present invention. Claims 9 and 14-18, which depend from claim 8 are likewise patentable. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 103

Claim 13 stands rejected under 35 U.S.C. § 103 as being obvious over Schader alone. Claim 13 depends from claim 8 which has been shown to be patentable over Schader. Therefore, claim 13 is patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.091002).

Respectfully submitted,

Date: 11/1/04

Jeffrey S. Bergman 45,925

Jonathan P. Osha, Reg. No. 33,986
OSHA & MAY L.L.P.
One Houston Center, Suite 2800
1221 McKinney Street
Houston, TX 77010
Telephone: (713) 228-8600
Facsimile: (713) 228-8778

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